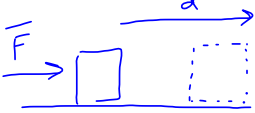


- 1) A box is pushed across the table with a force of 13.77 N and 37.84 J of work is done. What is the displacement of the box? *No friction*



$$W = Fd$$

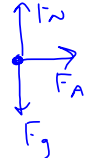
$$F = 13.77 \text{ N}$$

$$W = 37.84 \text{ J}$$

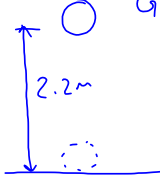
$$d = ?$$

$$d = \frac{W}{F}$$

$$= \frac{37.84 \text{ J}}{13.77 \text{ N}}$$

$$= 2.75 \text{ m}$$



- 2) A ball is lifted to 2.2 m above the ground to a gravitational potential energy of 100 J. What is the mass of the ball?



$$GPE = 100 \text{ J}$$

$$h = 2.2 \text{ m}$$

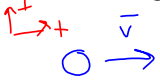
$$a_g = 9.8 \text{ m/s}^2$$

$$m = ?$$



$$GPE = m a_g h$$

$$m = \frac{GPE}{m a_g} = \frac{100 \text{ J}}{(2.2 \text{ m})(9.8 \text{ m/s}^2)} = 4.64 \text{ kg}$$

- 3) A ball with mass 0.16 kg is thrown with 32 J of kinetic energy. What is the velocity of the ball?



$$KE = 32 \text{ J}$$

$$m = 0.16 \text{ kg}$$


$$KE = \frac{1}{2} m v^2$$

$$v^2 = \frac{2(KE)}{m}$$

$$v = \sqrt{\frac{2(KE)}{m}}$$

$$= \sqrt{\frac{2(32 \text{ J})}{0.16 \text{ kg}}}$$

$$= 20 \text{ m/s}$$

$$\text{Total Mechanical Energy} = \text{GPE} + \text{KE}$$

	<u>GPE</u>	<u>KE</u>	<u>Total</u>
10m	100%	0%	100%
7.5m	75%	25%	100%
5m	50%	50%	100%
2.5m	25%	75%	100%
0m	0%	100%	100%

Charging cell phone:

electrical (outlet) \rightarrow chemical (battery) \rightarrow Electrical

sound + radiant + thermal